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of its line of eastward motion. Its brightness is about that of an ordinary first magnitude star on January 1, but this increases perceptibly during the two months. As seen in the telescope the minor axis of the rings is about one-tenth of the major. This fraction increases to about one-fifth during the course of the year. This will cause an increase in brightness of the planet which is quite perceptible.

Uranus is in the southwestern sky in the evening setting shortly after 9 P.M. on January 1, and before 6 P.M. on February 28. It comes to conjunction with the Sun on February 28. During the period it moves about 3° east and north in *Aquarius*. No very conspicuous star is near, and, especially during February, the planet is a little too near the Sun for naked eye view. *Venus* passes a little less than 1° south of *Uranus* on February 24.

Neptune is in opposition on February 3. It is moving slowly westward in the constellation *Cancer*, too faint to be seen without a telescope.

NOTES FROM PACIFIC COAST OBSERVATORIES

Nova Aquilae No. 4

This star was discovered by Dr. M. Wolf and announced by him in *A. N.* **211**, 119 as a variable star or nova. According to *Harv. Bull.* No. 753 the star later was named *Nova Aquilae* No. 4. The spectrum of the star has not hitherto been studied, and the object is evidently very little observed. For the sake of completeness we collect the estimates of brightness made by other observers:

Epoch	Mag.	Observer	Epoch	Mag.	Observer
1898.614	<14	Wolf	1918.515	≤12 (?)	Wolf
1902.528	<15	"	18.657	=11.8	Miss Woods
04.509	=16 (?)	"	19.507	=10.4	Wolf
06.559	<11	"	19.512	=10.3	Mündler
08.509	<14	"	19.542	=10.3	"
08.553	<11	"	19.575	=10.2	"
08.556	<10	"	19.578	=10.5	"
08.567	<12	"	19.602	=10.3	"
09.600	<15	"	19.622	=10.3	"
10.537	<14	"	19.632	=10.2	"
10.600	<15	"	19.668	=10.5	"
14.485	<14	"	19.734	=10.3	"
17.701	=15.0	Miss Woods	20.	<11.5	Miss Woods
			21.331	=12.7	"

The following estimates of the photographic magnitude have been obtained by the writer.

EPOCH	MAG.	INSTRUMENT	OBSERVER
1898.679	<15	Crocker telescope	E. F. Coddington
682	<15	"	"
684	<15	"	"
687	<14	"	"
693	<12	"	"
701	<14	"	"
1911.630	<15	Carte de Ciel Plate +1°.145	
1921.504	$=12.1$	Crossley reflector	K. Lundmark
517	$=11.7$	"	"
758	$=11.8$	Crocker telescope	"
769	$=11.5$	Crossley reflector	"
772	$=12.5$	"	"
802	$=12.2$	"	"
879	$=11.9$	"	"
882	$=11.9$	"	"

If we want the observations to fit the light curve of a typical nova we must assume that the original magnitude was between 15 and 16 and that the maximum occurred between 1917.7 and 1918.5. As the increase in brightness of a nova at the outburst generally seems to be about 10 magnitudes it is possible that *Nova Aquilae* No. 4 reached a maximum brightness close to 6^m.

The accurate position of the nova is, according to Mündler, $\alpha = 19^h 12^m 0^s.95$; $\delta = +1°33'37''.3$, Eq. 1875, Ep. 1919.6. The nova is situated very close to the long curved dark rift in the Milky Way described and photographed by Barnard in *Publ. Lick. Obsy.* 13, Plate 67, and numbered as object 138 in his catalog of dark markings in the sky. The nova seems to be located in a western branch of the rift. Star counts show that the number of fainter stars undoubtedly is much smaller in the immediate vicinity of the nova than it is in the surrounding area. The many cases observed by the writer in which novae occur in connection with dark markings seem to support the idea that novae are connected with the nebular matter in the universe and appear in the Milky Way not because the star density there is greatest but because the dark and bright irregular nebulae are typical Milky Way objects.

Photographs of the spectrum have been obtained as follows:

EPOCH	INSTRUMENT	EXPOSURE
1921 Sept. 22	Crossley; small (Keeler) quartz spectrograph	1^h30^m
Sept. 24–25	" large (Wright) "	9 0
Sept. 26–27	" " " "	9 16

The spectrum of the star is peculiar and it should be classified as belonging to the class Ro. The faintest traces of the spectrum extend to wavelengths somewhat below 3600 A and are probably to be ascribed to the head of the cyanogen absorption at 3590A, as the absorption bands with heads at 3883A, 4216A, 4390A and 4754A are very prominent. As shown by Dr. Shane and Dr. Rufus the first three absorption bands belong to cyanogen. The other two are well-known carbon bands. The head at 4737A is not so prominent. H and K are strong but λ4227 seems to be very weak. Several other absorption lines can be traced (e.g.λ4446) and some bright lines are suspected (e.g.λ4463). A comparison with the Ro star B.D.−10°.5057 shows in general a good resemblance between the two spectra. One of the most marked differences is that the absorption bands stand out more prominently in the nova spectrum than in that of the R star.

In this connection it may be noted that the spectrum of the nova Z *Centauri*, which appeared close to the elongated (spiral?) nebula N.G.C. 5253, according to Miss Cannon, on a plate of July 18, 1895, resembled class R. An absorption band from 4640A to 4750A was noted and another having a center at about 4227A. Dr. Campbell found that the star had a continuous spectrum with maximum visual intensity in the yellow-green; the green blue was very faint whereas the blue was much brighter visually than the green-blue.

Some writers have contended that Z *Centauri* is not a nova but a variable, but a discussion of the magnitude observations (*Kungl. Svenska Vetenskaps akademiens Handl.* Bd. 60) favors the idea that the star is a nova. Of course it is not impossible that *Nova Aquilae* No. 4 really is a variable class R star with long period, altho this suggestion does not find much support in the observations we now have. It is very important that observers follow this peculiar star with photometric observations as long as possible.

Mt. Hamilton, Nov. 10, 1921. KNUT LUNDMARK.

THE PLANETARY DISK OF NOVA CYGNI (1920)

During this summer several spectrograms have been obtained with the slitless arrangement of the spectrograph described by Mr. Wright in the *Lick. Obsy. Bull.* No. 291. The records show that the nova has developed a nebulous disk in an analogous way as *Nova Aquilae* No. 3 during the summer of 1919. The photo-